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PSYCHOLOGICAL INJURIES OF GUILAN UNIVERSITY OF MEDICAL SCIENCES STUDENTS DURING THE COVID-19 PANDEMIC

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Abstract

Purpose: The prevalence of Covid-19 is an unprecedented challenge for health education systems, especially medical students (nursing and medical). Our aim is to evaluate the psychological impact of this outbreak on nursing and medical students studying at Guilan University of Medical Sciences. **Design:** This analytical-cross-sectional study was carried out in a convenient form in the second half of the year 2021 on nursing and medical internship students. **Methods:** Data required were gathered by Demographic Questionnaire, online COVID-19 Fear, and COVID-19 Anxiety Tools. Data were analyzed by SPSS software (version 16). The significance level of the tests was $p<0.05$. **Results:** The mean total scores of fear and anxiety caused by COVID-19 were 14.22±4.31 and 8.28±6.64. There was a positive and significant correlation between the fear score and the total score of anxiety caused by COVID-19 ($P=0.001$, $r=0.717$); and a positive and significant correlation between fear scores and the score of the subscales of physical ($P=0.001$, $r=0.521$), and mental ($P=0.001$, $r=0.717$) anxiety. As well, there was a statistically significant relationship between the score of fear caused by COVID-19 and the variables of the female gender, occupation as a student, and the history of the development of COVID-19. There was a statistically significant relationship between the anxiety caused by COVID-19 and the variables of the female gender, occupation as a student, and educational major. **Conclusions:** Findings indicated that nursing and medical students were exposed to mental health problems due to fear and anxiety from the pandemic, and should undergo periodic mental health evaluations.

Keywords: COVID-19, Pandemic, Anxiety, Fear, Medical Students, Nursing Students.

1. INTRODUCTION

In later December 2019, the spread of a viral disease in the city of Wuhan, China, was reported. The agent of this disease was a new and genetically modified mutation of the family of Coronaviruses, called SARS-COVID-2, later known as COVID-19 (Zhu et al., 2020). Unfortunately, this virus rapidly spread across the world due to its highly contagious power, virtually contaminating the world within a short period (less than four months) (World Health Organization, 2020; Zangrillo et al., 2020). For this, on January 30, 2020, the World Health Organization declared the COVID-19 pandemic as a Public Health Emergency of International

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Concern (PHEIC) (Nikpouraghdam et al., 2020; World Health Organization, 2020). COVID-19 is now known as the sixth public health crisis worldwide (Wang et al., 2020), and according to global statistics, a mortality rate of 3.4% has been registered for this disease (World Health Organization, 2020).

Considering the pathogenic properties of this virus, its rapid spreading, the lack of definitive treatment, as well as mortality caused by it, this disease has differently threatened the mental health of people of different levels in society, including affected patients, health and treatment personnel, families, children, students, patients with psychological disorders, and even various occupations irrelevant with treatment and health (Bao et al., 2020; Chen et al., 2020). The lack of any definitive or preventive treatment for this disease has brought about much stress in societies (Anderson et al., 2020). This stress or anxiety may cause somatic dysfunctional disorders, including heart palpitations, breath shortness, and sleeplessness, while its continuation may lead to physical and mental illnesses such as anxiety, depression, endocrine disorders, and blood pressure (Dong & Zheng, 2020). Furthermore, significant emotional reactions, including anger, grief, and sadness, can be associated with this disease (Caleo et al., 2018).

One of the certain elements of a contagious disease concerning other conditions is fear (Ahorsu et al., 2020). Fear refers to an unpleasant, but natural, state that is caused in reaction to real dangers, and has a protective goal (Marks, 1987). Therefore, fear is a sensual reaction to threats and dangers, about specific behaviors such as avoidance and escape from such situations (Lewis et al., 2010). Fear is directly associated with the level of transfer and mortality of the disease. At higher levels of fear, people may not think rationally when reacting to COVID-19. In a stud by Hidalgo et al. at the University of Ecuador, it was found that students experienced much fear during the COVID-19 pandemic (Rodríguez-Hidalgo et al., 2020). Also, some studies suggested that fear of COVID-19 was greater in some people, and this high rate of fear could be due to stress sensitivity, which increased the risk of mental health after life stressful events (Gamonal Limcaoco et al., 2020).

Fear and anxiety caused by possible development create a higher and more destructive mental load that can cause psychological and mental disorders, weaken the immune system, and reduce the bodily power to fight diseases in people (Barrett et al., 2016).

Also, anxiety is described to be a natural reaction to stress (Maharaj et al., 2018) and is defined as an “Unstable state or fear and apprehension caused by predicting a really and perceptible threatening event or status” (Sydeman, 2018). In a study by Fu et al. on students at universities across China during the COVID-19 pandemic, findings revealed that around two-thirds of the students had experienced anxiety symptoms during the COVID-19 pandemic (Fu et al., 2021).

Also, various studies have shown that medical sciences students have experienced a higher prevalence rate of occupational burnout, depression, and mental problems (MacLean et al., 2016), and depression and anxiety rates reported by graduate students were unacceptably high (No authors listed, 2018). A study in Vietnam was performed on 5424 medical students during the COVID-19 pandemic and found that students of higher ages had experienced less fear in

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later educational years compared to students of low ages in their beginning educational years (Nguyen et al., 2020). Also, according to Eweida et al.'s study on nursing internship students in Alexandria, Egypt, it was noted that the 23-24 years-old age group, having a clinical and internship experience in hospital adult wards, etc. were recognized as the causes of developing psychological distress, while male gender and internship in pediatric wards were among the protective factors. Most psychological symptoms involved in the internship of nursing students during the COVID-19 pandemic were being under pressure, worthlessness, and depression. Moreover, most respondents reported that they did not enjoy their daily activities, lost their self-confidence, and failed to overcome their problems, thus losing their sleep due to taking care of patients (Eweida et al., 2020). Conversely, studies by Ansari et al. indicated that anxiety and depression among medical students of the University of Tehran before and after the prevalence of COVID-19 did not show a significant difference. Most symptoms reported by students during the pandemic were the inability to take rest, being panicked, fear, and horror (Amin et al., 2020).

Medical sciences students, including nursing and medical students, are considered to be vulnerable groups under the critical COVID-19 conditions due to the nature of their educational major, which obliged them to have a presence at hospitals and health and treatment centers; also, what can deteriorate their situation is their lack of preparedness to confront this situation. Therefore, these students may require extra resources and services to cope with the physical and mental outcomes of this condition. The results of this study may provide valuable insight for the providers of health services, including nurses; meanwhile, understanding dangerous factors involved in the mental health of students can be very useful for coping with the disease, and can also lay the ground for designing and implementing plans based on managerial, care, and protective evidence of medical sciences students and other students during the pandemic as well as relevant bodies. This study thus aimed to determine the level of fear and anxiety caused by the COVID-19 pandemic and its factors among nursing and medical students of the Guilan University of Medical Sciences in 2021.

2. MATERIALS AND METHODS

The present study was an analytical study of applied types, carried out in a cross-sectional form. The population under study consisted of nursing and medical students at Guilan University of Medical Sciences. The sample studied in this study included 340 nursing and medical students of the university (170 nursing and 170 medical students), who were selected via convenience sampling and based on inclusion criteria.

Because the present study had 15 independent variables, at least 340 students were selected. An estimation of the attrition probability of 20% led to include 360 students, which finally totaled 340. The sampling method was performed based on a certain number of the student population in these faculties using convenience sampling from among qualified students with inclusion criteria.

Gathering data tools included three scales, a) Individual-Social and Educational Information Questionnaire (Age, gender, birth rate, marriage status, having a child, educational major,

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semesters, educational level, living place, family structure, living arrangement, etc.); b) Corona Disease Anxiety Scale (CDAS) developed and validated to measure the anxiety caused by the prevalence of Coronavirus in Iran (Alipour et al., 2020). The final version of this tool included 18 items and 2 components (factors). Items 1-9 measure mental symptoms, and items 10-18 physical symptoms. This tool is scored on a four-degree Likert scale of (0=zero, 1=sometimes, 2=most often, and 3=always); thus, the highest and lowest score that respondents acquire on this scale range from 0-54. Higher scores on this scale indicate a higher level of anxiety among people. The reliability of this scale using Cronbach's alpha for the first and second factors, and the entire scale were α=0.879, α=0.861, and 0.919 (Tabachnic , 2013); and c) Fear of COVID-19 Scale (FCV-19S): This scale includes 7 items that measure emotional reactions to the COVID-19 pandemic, and is scored on a 5-point Likert scale of 1-5. Therefore, the highest and lowest score obtained by subjects ranges from 1-35.

A sum of higher scores indicates a higher level of fear. The validity and reliability of this tool were carried out by Ahour Sou, Pakpour et al. in Iran in 2020. Cronbach's alpha of this scale was 0.82, with both scales of fear and anxiety in Iran developed and validated based on the latest pandemic.

The internal consistency reliability and the test-retest reliability were calculated in 50 and 47 respondents, respectively at a two-week time interval. Generally, the questionnaires enjoyed good reliability. In evaluating the internal consistency of questionnaires, Cronbach's alpha rate of the Fear of COVID-19 scale was 0.859, and of the COVID-19 Anxiety scale and its mental and physical subscales were 0.889, 0.805, and 0.869, respectively, being acceptable.

Also, in evaluating repeatability (test-retest reliability), the ICC value of the Fear of COVID-19 scale was 0.656, being at a moderate level, while the value for the Covid-19 Anxiety scale, and its physical and mental subscales were 0.829, 0.771, and 0.862, respectively, being good.

After confirmation by the Ethics Committee and Research Council of the Guilan University of Medical Sciences, coded IR.GUMS.REC.2021.320, samples entered the study. A multiple linear regression model was used to determine the factors related to the scores of fear and anxiety caused by COVID-19. Considering the present study volume (n=340), the possible violation of the assumption of data normalcy did not have a significant effect on statistical methods (regression analysis, independent t-test, etc.) (Lumley et al., 2002 & Schmidt, 2018). To analyze data, SPSS version 16 was used, and the significance level was 0.05.

3. RESULTS AND DISCUSSION

Results suggested that out of the 340 people, 53.8% were female students, 98.2% were single, and the average age was 41.23 (SD=2.5); out of this, 67.1% were living with their families, and 83.2% reported their household income at the level required. The following table indicates that half of the students were majoring in medicine and the other half in nursing; also., 71.8% were spending their apprenticeship courses, while 28.2% were interns, and 48.2% described their internship period to be less than one year. 5.3% were suffering from underlying conditions, 36.8% had a history of COVID-19, and 10.6% had reported the death of their family members

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due to COVID-19. Results also suggested that 35% of the students had a record of occupation of student work during education at hospitals or health centers, and 41.2% had a history of COVID-19 disease. In the end, 87.6% of the students stated that they enjoyed personal gear when working as interns at hospitals, and 96.2% reported familiarity with individual protection principles.

As noted in Table 1, the mean score of fear caused by COVID-19 in students was 14.22 (SD=4.31) and their median score was 14 (IQR=11-17). Also, the mean score of anxiety caused by COVID-19 in students was 8.28 (SD=6.64), and their median score was 8(IQR=4-44). The mean score of physical anxiety caused by COVID-19 in students was 1.34(SD=2.73), and their median score was 0(IQR=0-2). Also, the mean score of mental anxiety caused by COVID-19 in students was 6.93 (SD=4.66), and their median score was 7(IQR=3-9).

Table 1: Descriptive Values of the Scores of Fear and Anxiety Caused By Covid-19 among Students

	Possible range	Observed range	Standard deviation (SD)	(Interquartile range) median
Fear caused by COVID-19	7-35	7-33	(4.31) 14.22	(11-17) 14
Anxiety caused by COVID-19	0-54	0-52	(6-64) 8-28	(4-11) 8
Physical anxiety caused by COVID-19	0-27	0-26	(2.37) 1.34	(0-2) 0
Mental anxiety caused by COVID-19	0-27	0-26	(4.66) 6.93	7(3-9)

Table 2 gives the relationship between fear and individual, social, and educational characteristics of students at multivariate levels. According to the findings, fear scores in girls were 1.30 units higher than boys on average (P=0.007, b=1.30); fear scores in students working at hospitals and health centers were 1.35 units higher than others on average (P=0.014, b=1.35). Fear scores in the students with over two years of internship were higher than those with one year of the internship; this difference, however, was not significant (P=0.055, b=1.39). Also, fear scores in students with a history of COVID-19 were higher than those of students with an absence of this disease; this difference was not, however, statistically significant (P=0.077, b=0.098). Other students' individual-social characteristics were not significantly related to their fear scores. The R^2 (coefficients of determination) value was 0.098, suggesting that 9.8% of the students' fear score changes could be explained by their individual and social characteristics.

Table 2: Relationship between Fear caused by COVID-19 and Individual, Social, and Educational Variables of Students using Multiple Linear Regression

Variable	Class	Non-standardized coefficient (b)	Standard error (se)	Standardized coefficient (β)	T	P
Age (year)		-0.03	0.13	-0.017	-0.22	0.829
Gender	Man	Reference				
	Female	1.30	0.48	0.149	2.71	0.007
Marriage status	Single	Reference				
	Married	-0.17	0.79	-0.012	-0.21	0.832
Life arrangements	Family	Reference				
	Friends and	-0.03	1.35	-0.001	-0.02	0.982

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(who are you living with?)	colleagues					
	Dormitory	-0.15	0.68	-0.012	-0.22	0.827
	Alone	-0.52	0.70	-0.042	-0.74	0.459
Household income level	Less than required	Reference				
	To the level required	-0.51	0.93	-0.044	-0.55	-0.582
	More than required	0.20	1.24	0.013	0.16	0.874
History of underlying disease	Yes	0.47	1.07	0.024	0.44	0.660
	No	Reference				
Educational semester	Internship	Reference				
	Internship	-0.72	0.58	-0.074	-1.23	0.218
Internship time	Less than a year	Reference				
	1-2 years	0.05	0.54	0.006	0.10	0.922
	Over 2 years	1.39	0.72	0.118	1.93	0.055
Occupation at hospitals or health centers	Yes	1.35	0.55	0.148	2.46	0.014
	No	Reference				
History of infection with COVID-19	Yes	0.98	0.55	0.109	1.77	0.077
	No	Reference				
Death of family members or relatives due to COVID-19	Yes	0.90	0.80	0.064	1.13	0.259
	No	Reference				
Taking care of the patient with COVID-19	Yes	-0.58	0.56	-0.066	-1.05	0.296
	No	Reference				
Personal gear	Enough	Reference				
	Not enough	-1.04	0.80	-0.079	-1.30	0.195
Familiarity with individual protection principles	Yes	-0.96	1.40	-0.042	-0.69	0.493
	No	Reference				
Major	Nursing	Reference				
	Medical	0.67	0.65	0.077	1.03	0.303
R^2			0.098			

Table 3 gives factors related to the scores of anxiety caused by COVID-19 in students using multiple linear regression. According to the findings, anxiety scores among female students were, on average, 1.26 units higher than that of males (P=0.018, b=1.26); the anxiety score of students familiar with individual protection principles was, on average, 4.86 units lower than others (P=0.002, b=-4.86). Other individual, social, and educational characteristics of students were not statistically significant with their anxiety scores, i.e., as the fear score increased, the students' overall anxiety score increased. In other words, for one unit of increase in students' fear score, their anxiety score increased by 1.05 units on average (P<0.001, b=1.05). The R^2

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value was 0.541, suggesting that 54.1% of the students' anxiety score changes could be explained by individual, social, and educational characters and their fear scores, also.

Table 3: Factors related to Anxiety caused by COVID-19 among Students using Multiple Linear Regression

Variable	Class	Non-standardized coefficient (b)	Standard error (se)	Standardized coefficient (β)	T	P
Age (year)		-0.03	0.15	-0.011	-0.20	0.838
Gender	Man	Reference				
	Female	1.26	0.53	0.095	2.37	0.018
Marriage status	Single	Reference				
	Married	-0.015	0.87	-0.002	-0.06	0.955
Life arrangements (who are you living with?)	Family	Reference				
	Friends and colleagues	0.11	1.48	0.003	0.08	0.939
	Dormitory	0.13	0.74	0.007	0.17	0.863
	Alone	-0.33	0.77	-0.018	-0.43	0.665
Household income level	Less than required	Reference				
	To the level required	0.70	1.01	0.040	0.69	0.489
	More than required	2.54	1.35	0.112	1.88	0.061
History of underlying disease	Yes	1.28	1.17	0.043	1.10	0.272
	No	Reference				
Educational semester	Internship	Reference				
	Internship	0.74	0.64	0.050	1.16	0.247
Internship time	Less than a year	Reference				
	1-2 years	0.79	0.59	0.057	1.33	0.184
	Over 2 years	-0.04	0.79	-0.002	-0.05	0.963
Occupation at hospitals or health centers	Yes	-0.06	0.60	-0.004	-0.10	0.922
	No	Reference				
History of infection with COVID-19	Yes	-0.18	0.61	-0.013	-0.30	0.768
	No	Reference				
Death of family members or relatives due to COVID-19	Yes	-1.45	0.87	-0.067	-1.66	0.098
	No	Reference				
Taking care of the patient with COVID-19	Yes	0.77	0.61	0.057	1.26	0.209
	No	Reference				
Personal gear	Enough	Reference				
	Not enough	0.27	0.88	0.013	0.30	0.762
Familiarity with individual	Yes	-4.86	1.53	-0.141	-3.18	0.002
	No	Reference				

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protection principles						
Major	Nursing	Reference				
	Medical	0.64	0.71	0.048	0.90	0.371
Fear caused by COVID-19		1.05	0.06	0.692	1.317	0.001<
^{2}R		0.541				

Table 4 gives factors related to the scores of physical anxiety caused by COVID-19 in students using multiple linear regression. According to the findings, among individual, social, and educational variables, only familiarity with individual protection principles was associated with physical anxiety scores, with the anxiety of the students familiar with individual protection principles being, on average, 2.78 units lower than others (P<0.001, b=-2.78); i.e., as the fear score increased, the student's overall physical anxiety score increased. In other words, for one unit of increase in students' fear score, their physical anxiety score increased by 1.05 units on average (P<0.001, b=0.32). The R^2 value was 0.337, suggesting that 33.7% of the students' physical anxiety score changes could be explained by individual, social, and educational characters and their fear scores, also.

Table 4: Factors related to physical anxiety caused by COVID-19 in students using multiple linear regression

Variable	Class	Non-standardized coefficient (b)	Standard error (se)	Standardized coefficient (β)	T	P
Age (year)		-0.05	0.07	-0.049	-0.73	0.468
Gender	Man	Reference				
	Female	-0.13	0.26	-0.023	-0.48	0.632
Marriage status	Single	Reference				
	Married	0.20	0.43	0.024	0.47	0.640
Life arrangements (who are you living with?)	Family	Reference				
	Friends and colleagues	0.04	0.73	0.002	0.05	0.961
	Dormitory	0.20	0.37	0.026	0.54	0.590
	Alone	-0.02	0.38	-0.003	-0.06	0.955
Household income level	Less than required	Reference				
	To the level required	0.18	0.50	0.025	0.37	0.715
	More than required	1.00	0.67	0.107	1.50	0.136
History of underlying disease	Yes	1.11	0.58	0.091	1.92	0.056
	No	Reference				
Educational semester	Internship	Reference				
	Internship	0.11	0.31	0.018	0.35	0.729
Internship time	Less than a year	Reference				
	1-2 years	0.10	0.29	0.018	0.35	0.725
	Over 2 years	0.24	0.39	0.033	0.62	0.535
Occupation at hospitals or	Yes	-0.15	0.30	-0.026	-0.49	0.623

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health centers	No	Reference				
History of infection with COVID-19	Yes	0.23	0.30	0.040	0.75	0.451
	No	Reference				
Death of family members or relatives due to COVID-19	Yes	-0.33	0.43	-0.037	-0.77	0.443
	No	Reference				
Taking care of the patient with COVID-19	Yes	0.55	0.30	0.100	1.84	0.066
	No	Reference				
Personal gear	Enough	Reference				
	Not enough	0.25	0.43	0.030	0.57	0.569
Familiarity with individual protection principles	Yes	-2.78	0.76	-0.195	-3.68	0.001<
	No	Reference				
Major	Nursing	Reference				
	Medical	0.04	0.35	0.008	0.12	0.903
Fear of COVID-19		0.30	0.03	0.515	1.730	0.001<
R^2				0.337		

Table 5 gives factors related to the scores of mental anxiety caused by COVID-19 in students using multiple linear regression. According to the findings, among individual, social, and educational variables, only students' gender was associated with their mental anxiety scores, with the mental anxiety of the female students being, on average, 1.33 units higher than males (P<0.001, b=1.33); i.e., as the fear score increased, the students' overall mental anxiety score increased. In other words, for one unit of increase in students' fear score, their mental anxiety score increased by 0.74 units on average (P<0.001, b=0.74). The R^2 value was 0.558, suggesting that 55.8% of the students' mental anxiety score changes could be explained by individual, social, and educational characters and their fear scores, also.

Table 5: Factors related to the mental anxiety caused by COVID-19 in students using multiple linear regression

Variable	Class	Non-standardized coefficient (b)	Standard error (se)	Standardized coefficient (β)	T	P
Age (year)		0.01	0.10	0.001	0.03	0.979
Gender	Man	Reference				
	Female	1.33	0.36	0.143	3.64	0.001<
Marriage status	Single	Reference				
	Married	-0.23	0.59	-0.016	-0.38	0.703
Life arrangements (who are you living with?)	Family	Reference				
	Friends and colleagues	0.08	1.01	0.003	0.03	0.938
	Dormitory	-0.03	0.51	-0.002	-0.06	0.955
	Alone	-0.30	0.53	-0.022	-0.56	0.574
Household income level	Less than required	Reference				
	To the level required	0.51	0.78	0.041	0.73	0.466

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	More than required	1.51	0.93	0.095	1.63	0.105
History of underlying disease	Yes	0.20	0.80	0.009	0.24	0.808
	No	Reference				
Educational semester	Internship	Reference				
	Internship	0.70	0.44	0.068	1.60	0.111
Internship time	Less than a year	Reference				
	1-2 years	0.63	0.41	0.065	1.56	0.119
	Over 2 years	-0.28	0.54	-0.022	-0.52	0.604
Occupation at hospitals or health centers	Yes	0.10	0.42	0.010	0.23	0.819
	No	Reference				
History of infection with COVID-19	Yes	-0.39	0.42	-0.041	-0.95	0.345
	No	Reference				
Death of family members or relatives due to COVID-19	Yes	-1.11	0.60	-0.074	-1.85	0.065
	No	Reference				
Taking care of patients with COVID-19	Yes	0.24	0.42	0.025	0.57	0.567
	No	Reference				
Personal gear	Enough	Reference				
	Not enough	0.05	0.60	0.004	0.09	0.930
Familiarity with individual protection principles	Yes	-2.06	1.05	-0.085	-1.96	0.051
	No	Reference				
Major	Nursing	Reference				
	Medical	0.67	0.49	0.073	1.38	0.169
Fear of COVID-19		0.74	0.04	0.697	1.788	0.001<
R^2		0.558				

3.1. Discussion of Results

According to the results, the average score of fear from COVID-19 in students was mild. Because the present study was performed in later peaks of COVID-19 (exactly before the sixth peak of the virus in Iran and following the second vaccination in students), students were more prepared compared to the previous stages of the COVID-19 pandemic, which could reduce fear among these people under such critical conditions. In this connection, Kuśnierz et al. (2021) carried out a study among Polish students and reported the score of fear from COVID-19 to be 12.93±5.6, and their median score to be 11 (Kuśnierz et al., 2021). Also, Hidalgo et al. did a study on undergraduate students of Ecuador universities and found an average fear score of 14.37±5.38, which was very close to that of the present study, while its severity was moderate (Rodríguez-Hidalgo et al., 2020).

The total COVID-19 anxiety score in students was 8.28±6.67, and their median score was 8 (IQR=4-11). According to the literature, a score of 0-16 was for mild anxiety, a score of 17-29 for moderate, and a score of 30-54 for severe anxiety (Nakhaeizadeh & Mohammadi, 2021). Concerning subscales, anxiety scores in the psychological dimensions included 0-5 (without anxiety or mild anxiety), 6-19 (moderate anxiety), and 20-27 (severe anxiety); while anxiety scores in the physical dimension included 0-1 (without anxiety or mild anxiety), 2-9 (moderate anxiety), and 10-27 (severe anxiety) (Kamali et al., 2021). To describe the scores reported in

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this study, one would say the COVID-19 anxiety scores among students of the university were generally mild and were mild to moderate, and moderate in both physical and mental dimensions, respectively.

In this connection, Fathi's study following the first wave of the pandemic on undergraduate students of the Islamic Azad University of Tabriz City in 2020 indicated that the average total anxiety score was 9.72±8.47, being very close to the present study, which reported the severity of anxiety at a low and ordinary rate (Fathi et al., 2020). In a study on intern students of Guilan University of Medical Sciences in 2020, Saberi et al. reported the COVID-19 anxiety score to be 10.97±9.53, and their median score to be 8 (1-54). The severity of anxiety was reported to be mild, and the scores reported were close to those of the present study (Saberi et al, 2020). On the other hand, the results of some studies were not in line with those of the present study. These studies include the study by Aghajani et al. (2020) who reported the average total score of COVID-19 anxiety among non-medical students of Ardabil to be 32.38±11.50 (At moderate to severe) (Aghajani et al., 2021). The present study was carried out before the beginning of the sixth peak of Coronavirus in the second half of 2021, which saw lower mortality and affection rates, and this is thought to have affected the study results, thus reducing fear of COVID-19 among students.

According to the results, the average COVID-19 fear scores in students based on gender, occupation at health centers, and history of infection with COVID-19 were significant; also, the average fear score in medical students was higher compared to nursing students, and in students with protective gear compared to those without the gear; though this difference was not statistically significant. Concerning the variable of gender, women students held a higher average fear score than male students in the present study (P=0.011). Meanwhile, many studies, including Kuśnierz (P=0.001) (27), Negoyen (P=0.001), and Ahamed (P=0.001) (Ahammed et al., 2021) suggest that there was a significant difference between the variable of gender and fear of COVID-19, being in line with the present study. To explain the finding, women were found to be more vulnerable than men during the COVID-19 pandemic, because women could experience more fear and anxiety than men due to their gender characteristics (Altemus et al., 2014).

Also, the results of the present study indicated a significant relationship between the occupation of students at health and treatment centers (P=0.001) and the history of infection with COVID-19 (P=0.048) with the COVID-19 fear score. Kheiri et al. also concluded that 2.03% of the therapeutic personnel working at educational hospitals enjoyed mental health, and 69.8% of them were facing mental disorders, being in line with the findings of the present study (Kheyri et al., 2017). As for the variable of infection with COVID-19 in the study by Liu, it was noted that the history of infection with COVID-19 and the risk of contracting and infecting others increased the risk of psychological disorders among medical personnel (Liu CY, 2020). To describe the present study findings, one would say that patients with COVID-19 had a low psychological capacity tolerance, and considering the current situation of this disease in the world, people may be severely subjected to psychological disorders, such as anxiety, fear depression, and negative thoughts (Yao et al., 2020).

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In sum, as for the variable of enjoying personal protective gear, Eweida reported a higher score of the nursing interns who had used protective gear to reduce their stress (Eweida et al., 2020). Sarboozi Hosein Abadi et al. (2020) and Pouralizadeh et al. (2020) also stated that there was a significant relationship between stress and anxiety and satisfaction with individual protection gear. The nurses who had given low scores to individual gear were more anxious and worried (P=<0.05), not in line with the findings of the present study. Also, results comparing COVID-19 anxiety scores based on individual, social, and educational variables of nursing and medical students suggested that the total COVID-19 anxiety scores based on the variables of gender, occupation, and educational major were significant.

As for the variable of gender in the present study, the mean woman students' anxiety score was significantly higher than that of their male counterparts (P=0.001<0.05). Many of the previous studies were in line with those of the present study. These studies include. Rodríguez-Hidalgo et al. (2020) and Halperin et al. (2021) studies; however, unlike the above studies and the present study, Azimi et al.'s study indicated that the males' anxiety score was higher than that of women (Vahedian-Azimi et al., 2020), inconsistent with the results of the present study.

The findings of the present study indicated that female students were more exposed to COVID-19 anxiety than male students. This is explained by the fact that from an epidemiological perspective, women were more exposed to psychological disorders including anxiety and depression (Lim et al., 2018). The results also suggested a significant relationship between the occupation of students at health and treatment centers (P=0.012<0.05) and educational major (P=0.027<0.05) with the COVID-19 anxiety score. As for the variable of students; occupation, Zheng and Wang reported that occupation and the history of infection with COVID-19 under pandemic conditions could cause more stress in students and lead to greater levels of anxiety (Zheng, 2020).

In the end, as for the variable of educational major, the average COVID-19 anxiety score in medical students was significantly higher than that of nursing counterparts (P=0.027<0.05). A study by Saddik about the relationship between medical majors and anxiety noted that medical students experienced higher anxiety and fear than non-medical students (Saddik et al., 2020). One would say that during COVID-19, medical students were more exposed to the disease due to their internship periods at hospitals and their presence in environments infected with COVID-19. This increased stress and anxiety in medical students compared to others (Safa et al., 2021).

According to the results, the average physical anxiety score in students with a history of COVID-19 was significantly higher than that of others (P=0.027), and the average mental anxiety score in students with a history of taking care of infected patients was higher than that of others, but not statistically significant (P=0.097). In this connection, Hasmujaj showed that the average physical anxiety score of nursing students with a history of infection with COVID-19 was higher than others (Hasmujaj & Dizdari, 2021). It appears that the higher fear and anxiety scores in students with a history of infection with COVID-19 or a history of taking care of COVID-19 patients could be caused by such factors as the unavailability of any definitive treatment for the disease, and the exposure of these students to the situation where they saw

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the patients losing their lives due to the disease.

According to the results, the average mental anxiety score based on the variables of gender, student occupation in health and treatment centers, and educational major was significant (P<0.05), as the average mental anxiety score in female students compared to male students (P=0.001), and in students working in health and treatment centers compared to other students (P=0.003), and in medical students compared too nursing students (P=0.009) was significant. Dimitri et al. showed that working students, compared to those without any occupation, experienced higher levels of anxiety (Demetriou et al., 2021). A study by Azimi also considered the working experience and occupation of medical students in corona wards to increase stress, anxiety, and depression scores, being in line with the findings of this study (Vahedian-Azimi et al., 2020). Here, one would refer to Hasmujaj's study on nursing students, where the average physical anxiety score based on gender showed a significant difference (P=0.002). In women, this average rate was higher than in men, though no significant mental anxiety difference was noted, being contradictory to our present study (44).

Results indicated a correlation between fear scores and anxiety scores, and a correlation between fear scores and physical anxiety and mental anxiety scores. This indicated that there was a positive and significant correlation between fear scores and total anxiety scores from COVID-19 among students (R=0.714, P<0.001). In other words, with an increase in students' fear scores, their total anxiety scores generally increased; also, a positive and significant correlation was noted between fear scores and physical anxiety (P<0.001, r=0.521), and mental anxiety (P<0.001, r=0.717) scores in students. Hidalgo et al. found a positive and significant correlation between the fear of COVID-19 and anxiety subscales (Rodríguez-Hidalgo et al., 2020). For the researcher, considering the increased anxiety score and the effect of fear scores on it that shows a correlation between the two, it appears that nursing and medical students were more likely to be exposed to fear and anxiety from this disease due to the nature of their educational major and obligation for presence in the internship environment, and exposure to COVID-19. If this fear and anxiety persist, they could cause mental health problems and hypochondriasis, and post-incident stress over time. These disorders may in the long run lead to psychological distress, and even, suicidal ideation. Regarding the variables of internship experience and the student's history of infection with COVID-19, which did not show a statistically significant relationship with COVID-19 fear, the Sa'adati-rad's study can be referred to which suggested that there was no significant difference between the health of people who were not interns and those who were (Saadati Rad et al., 2021). To elaborate on this, it seems that the exposure of students to patients with COVID-19 during occupation or internship and the lack of personal protective gear during the pandemic, along with other factors such as being female and having a history of infection with COVID-19, the students' fear scores increased compared to other students.

Results showed that the female gender (P=0.018), and students' familiarity with individual protective principles (P=0.002) were significantly related to COVID-19 anxiety. Other variables were not significantly related to CVID-19 anxiety. Concerning the variable of gender, Kamal Othman considered the female gender to be an independent major factor for higher

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levels of stress, anxiety, and depression (Kamal & Othman, 2020).

The multiple linear regression analysis was performed for identifying demographic factors related to the subscale score of physical anxiety caused by COVID-19 in students. Students' familiarity with individual protective principles was statistically related to the physical anxiety of COVID-19($P<0.001$). Other variables did not have any statistically significant relationship with the physical anxiety of COVID-19. It is thus concluded that the students' unfamiliarity with personal protection principles could cause anxiety under the pandemic conditions, and if students were not well prepared for that, they could develop anxiety and mental health problems.

4. CONCLUSION

Results indicated that the level of fear from COVID-19 in students with an average rate of 14.22±4.31 and a median score of 14 was mild. Study results indicated the total score of COVID-19 fear based on the variables of the female gender, student occupation, and the history of their infection with the disease was significant. Findings also revealed that the total anxiety of COVID-19 in students with an average rate of 8.28±6.64, and the median score of 8 was mild. Because the average fear and anxiety scores were significantly related to the variables of educational major (medical against nursing), students' occupation (employed against unemployed), and gender (male and female), a screening program for fear and anxiety and mental health disorders is recommended to be periodically developed for students; also, free counseling sessions to reduce peoples' stress are suggested. For this, it is recommended to conduct a study in this area to investigate the effects of mental health screening programs and their effects on identifying and treating students suffering from fear and anxiety. Considering the positive and significant relationship between fear scores and anxiety scores among students, it is suggested to investigate students in terms of mental health and sleeping issues, and suicidal ideation. As well, a similar study is recommended for other students of this university by considering the two variables of sleep and suicidal ideation.

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Copeting Interest

The author has no competing interests to declare

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